

**AMENDMENTS TO THE DRAWINGS**

The attached sheets of drawings include changes to Figs. 2, 8 and 9. These sheets replace the original sheets. In Figs. 2 and 8, previously omitted arrowheads that show input and output of each device have been added. With respect to Fig. 9, a legend, Prior Art, has been added at the Examiner's direction.

Attachment: Replacement Sheets.

### **REMARKS**

Claims 1-9, 11-16 and 18-23 are currently pending in the subject application and are presently under consideration. Claims 1, 11, 14 and 21 have been amended to further emphasize aspects of applicants' claimed invention, and claim 9 has been amended to cure minor informalities. In addition, claims 10, 17 and 24 have been cancelled without prejudice or disclaimer. A version of all pending claims is presented at pages 2-5 of this Reply. In addition, drawing amendments to Figs. 2, 8 and 9, as requested by the Examiner, are attached herewith. Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

#### **I. Objection to Claim 10**

Claim 10 is objected to because the language "claim 1" should be shown. Withdrawal of this rejection is requested in view of the cancellation of claim 10 which renders the subject objection moot.

#### **II. Rejection of Claim 9 Under 35 U.S.C. §112**

Claim 9 stands rejected under 35 U.S.C. §112, second paragraph as being incomplete for omitting essential steps. This rejection should be withdrawn in view of the amendments made to the subject claim to cure minor informalities identified by the Examiner. Further with respect to the definitions of S and U, these equations are now self-defining in light of the amendments made herein. Accordingly, withdrawal of this rejection is requested.

#### **III. Rejection of Claims 1-24 Under 35 U.S.C. §101**

Claims 1-24 stand rejected under 35 U.S.C. §101 as it is alleged that the claimed invention is directed to non-statutory subject matter. Withdrawal of this rejection is requested for at least the following reasons. The subject claims produce a useful, concrete and tangible result.

Because the claimed process applies the Boolean principle [abstract idea] *to produce a useful, concrete, tangible result* ... on

its face the claimed process comfortably falls within the scope of §101. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358. (Fed. Cir. 1999) (Emphasis added); *See State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1601 (Fed.Cir.1998). The inquiry into patentability requires an examination of the contested claims to see if the claimed subject matter, as a whole, is a disembodied mathematical concept representing nothing more than a "law of nature" or an "abstract idea," or if the mathematical concept has been ***reduced to some practical application rendering it "useful."*** *AT&T* at 1357 citing *In re Alappat*, 33 F.3d 1526, 31 1544, 31 U.S.P.Q.2D (BNA) 1545, 1557 (Fed. Cir. 1994) (emphasis added).

Independent claims 1, 11, 14, and 21 produce one or more useful, concrete and tangible results. Independent claim 1 (and similarly, independent claims 11, 14, and 21) recites: ***a learning component that generates non-standardized data that relates to a split in a decision tree; and a scoring component that scores the split as if the non-standardized data at a subset of leaves of the decision tree had been virtually shifted and/or scaled, the non-standardized data shifted through omission of a matrix operation.***

Applicants' claimed invention yields a number of useful, concrete and tangible results. Specifically, generating non-standardized data that relates to a split in a decision tree; and scoring the split as if the non-standardized data at a subset of leaves of the decision tree had been shifted and/or scaled. All the aforementioned results are useful, concrete and tangible.

In the Office Action the Examiner appears to be under the misapprehension that 35 U.S.C. §101 requires the claims be tied to a technological art, environment or machine. Applicants' representative disagrees. United States patent law has never supported the application of a "technological aspect" or "technological arts" requirement. Title 35 of the United States Code does not recite, explicitly or implicitly, that inventions must be within the "technological arts" to be patentable. Section 101 of Title 35 recites "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore ..." Accordingly, while an invention must be "new" and "useful," there is no statutory requirement that it fit within a category of "technological arts." Moreover, while there has been some judicial discussion of the expression "technological arts" and

its relationship to patentability, this dialogue has been limited and its viability questioned. In 1970, the Court in *In re Musgrave*, 431 F.2d 882, 167 USPQ 280 (CCPA 1970) introduced a standard for evaluating process claims under Section 101: any sequence of operational steps is a patentable process so long as it is within the technological arts so as to promote the progress of useful arts. While a few subsequent courts have made reference to this so-called “technological arts” standard, the Supreme Court in *Gottschalk v. Benson*, 409 U.S. 63, 175 USPQ 673 (1972) refused to adopt this standard when it reversed the Court of Customs and Patent Appeals decision in the aforementioned case. Moreover, the Court of Customs and Patent Appeals effectively rejected the technological arts test in *In re Toma*, 575 F.2d 872, 878, 197 USPQ 852, 857 (CCPA 1978), by strongly suggesting that *Musgrave* was never intended to create a technological arts test for patent eligibility:

The language which the examiner has quoted [from *Musgrave* and its progeny relating to “technological arts”] was written in answer to “mental steps” rejections and was not intended to create a generalized definition of statutory subject matter. Moreover, it was not intended to form a basis for a new § 101 rejection as the examiner apparently suggests. *In re Toma*, 575 F.2d at 878, 197 USPQ at 857.

Moreover, the “technological arts” consideration is completely devoid from recent Federal Circuit cases like *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, (Fed. Cir. 1999), and *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1601 (Fed.Cir.1998).

It is submitted that the “technological arts” requirement propounded by *Musgrave* should be confined to its facts and holding, *i.e.*, that the computer-related invention in dispute was a patentable invention within the meaning of Section 101 because it was an advancement in technology which clearly promoted the useful arts. Thus, the decision in *Musgrave* should not be construed as a “technological arts” requirement for patentability, but rather as a proposition that computer-implemented process claims might be patentable subject matter.

Further, in *Ex parte Lundgren*, Appeal No. 2003-2088, Application 08/093,516, (Precedential BPAI opinion September 2005), the Board rejected the Examiner's argument that *Musgrave* and *Toma* created a technological arts test. "We do not believe the court could have been any clearer in rejecting the theory the present examiner now advances in this case." *Lundgren*, at 8. The Board held that "there is currently no judicially recognized separate 'technological arts' test to determine patent eligible subject matter under § 101." *Lundgren*, at 9. Thus, in view of the foregoing it is evident that there are no recognized exceptions to eligible subject matter other than laws of nature, natural phenomena, and abstract ideas.

Moreover, the Examiner's contention that the claims are directed to abstract ideas does not comport with the reality that the subject claims recite useful, concrete and tangible results, viz., generating non-standardized data that relates to a split in a decision tree; and scoring the split as if the non-standardized data at a subset of leaves of the decision tree had been shifted and/or scaled. The fact that the claims might utilize abstract ideas to render a result is neither germane nor relevant to the determination of whether the result itself is useful, concrete and tangible. According to *AT&T Corp. v. Excel Communications, Inc.* all that is required is that the "concept has been **reduced to some practical application rendering it 'useful.'**" *AT&T* at 1357 citing *In re Alappat*, 33 F.3d 1526, 1544, 31 USPQ2d (BNA) 1545, 1557 (Fed. Cir. 1994) (emphasis added).

In view of at least the foregoing, it is believed that the subject claims clearly satisfy the legal standard imposed by 35 U.S.C. §101, and that this rejection should be withdrawn.

#### **IV. Rejection of Claims 1-8, 10-16, 19 and 21-24 Under 35 U.S.C. §102(e)**

Claims 1-8, 10-16, 19 and 21-24 stand rejected under 35 U.S.C. §102(e) as being anticipated by Hulten *et al.* US 2004/0243548 A1. Withdrawal of this rejection is requested for at least the following reasons. Hulten *et al.* fails to disclose or suggest all aspects recited in the subject claims.

A single prior art reference anticipates a patent claim only if it *expressly or inherently describes each and every limitation set forth in the patent claim.* *Trintec Industries, Inc. v. Top-U.S.A.*

*Corp.*, 295 F.3d 1292, 63 USPQ2d 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The ***identical invention must be shown in as complete detail as is contained in the ... claim.*** *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (emphasis added).

Applicants' claimed invention relates to an efficient process for scoring splits in a decision tree in order to evaluate a model's performance while mitigating effects of any parameter prior used to score models. To this end independent claims 1, 11, 14 and 21, as amended, recite similar features, namely: *a scoring component that scores the split as if the non-standardized data at a subset of leaves of the decision tree had been shifted and/or scaled, the non-standardized data virtually shifted through omission of a matrix operation.* Hulten *et al.* does not disclose or suggest these features of the claimed subject matter.

Hulten *et al.* relates to utilizing a dependency network to create a model of pattern, wherein scalable learning methods are leveraged to obtain models from data previously not learnable by scalable techniques. By efficiently converting a dependency network to a model or pattern, such as for example, a Bayesian network, users gain an ability to analyze extremely large datasets. The cited document however, does not disclose a component that scores a split relating to a decision tree as if non-standardized data at a subset of leaves of the decision tree had been shifted and/or scaled wherein the non-standardized data is virtually shifted through omission of a matrix operation. The claimed subject matter in contrast is capable of computing a score of a split relating to a decision tree as if non-standardized data at a subset of the leaves of the decision tree had been virtually shifted *via* omission of a matrix operation. Given the cited document's silence regarding these pertinent features of the claimed subject matter one can conclude that Hulten *et al.* and applicants' claimed invention are clearly distinguishable. Accordingly, withdrawal of this rejection with respect to independent claims 1, 11, 14, and 21 (and associated dependent claims) is respectfully requested.

**V. Rejection of Claims 17, 18 and 20 Under 35 U.S.C. §103(a)**

Claims 17, 18 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hulten *et al.* (US 2004/0243548A1) as applied to claims 1-8, 10-16, 19 and 21-24 above, and further in view of Chickering *et al.* ("Efficient Determination of Dynamic Split Points in a Decision Tree," Proceedings of the IEEE International Conference of Data Mining, November 29-December 2, 2001). This rejection should be withdrawn for at least the following reasons. Claim 17 has been cancelled and the features set forth therein have been incorporated into independent claims 1, 11, 14, and 21. With respect to claims 18 and 20, these claims depend from independent claim 14, and Chickering *et al.* fails to remedy the aforementioned deficiencies of Hulten *et al.* Additionally, Hulten *et al.* is not a citable reference with respect to the subject application. The following is a quotation from 35 U.S.C. §103(c), which forms at least one basis for withdrawal of all rejections in the Office Action:

(c) Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

It is respectfully submitted that Hulten *et al.* qualifies as art under 35 U.S.C. §102(e), and the subject matter disclosed by Hulten *et al.* and applicants' claimed invention were under an obligation of assignment to Microsoft Corporation at the time the invention was made. Therefore, in accordance with 35 U.S.C. §103(c), Hulten *et al.* is not a citable reference with respect to the subject application. Accordingly, this rejection should be withdrawn.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP485US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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